ABSTRAK

Wildan Akbar Fauzan. **PENGARUH URUTAN KOMPOSISI DAN KETEBALAN BAHAN FILTER TERHADAP TINGKAT KEASAMAN DAN KANDUNGAN OKSIGEN PADA *GREY WATER*.**

Skripsi, Surakarta: Fakultas Keguruan dan Ilmu Pendidikan Universitas Sebelas Maret, Januari 2019.

Tujuan dari penelitian ini untuk, (1) mengetahui pengaruh ketebalan komposisi alat *Grey Water Filter* terhadap tingkat keasaman (PH), tingkat oksigen kimiawi (COD) dan tingkat oksigen biokimia (BOD) air (2) mengetahui pengaruh urutan komposisi alat *Grey Water Filter* terhadap PH, COD dan BOD air (3) mengetahui ketebalan optimal dari *Grey Water Filter* yang menghasilkan penurunan maksimal terhadap PH, COD dan BOD air (4) Mengetahui urutan komposisi yang optimal dari *Grey Water Filter* yang menghasilkan penurunan maksimal terhadap PH, COD dan BOD air.

Penelitian ini menggunakan metode kuantitatif eksperimen dan teknik analisa data menggunakan regresi linear sederhana. Penelitian ini dilaksanakan pada bulan Agustus-Oktober 2018 yang meliputi pembuatan alat *Grey Water Filter* dan pengujian laboratorium. Pembuatan alat dilaksanakan di Kampus V Universitas Sebelas Maret dan pengambilan data dilaksanakan di Sub Lab Kimia UPT Laboratorium Terpadu Universitas Sebelas Maret, Surakarta. Variabel yang mempengaruhi dalam penelitian ini adalah (1) Variabel bebas: variasi ketebalan komposisi yaitu 20 cm, 40 cm, 60 cm, dan 80 cm, dan variasi urutan komposisi yang terdiri dari pasir, kerikil, ijuk dan arang, (2) Variabel terikat: PH air, tingkat oksigen kimiawi (*Chemical Oxygen Demand*/COD) dan tingkat oksigen biokimia (*Biochemical Oxygen Demand*/BOD) akibat variasi ketebalan dan urutan komposisi.

Hasil penelitian sebagai berikut, (1) Adanya pengaruh ketebalan komposisi alat *Grey Water Filter* terhadap penurunan PH, COD dan BOD (2) Adanya pengaruh urutan komposisi alat *Grey Water Filter* terhadap penurunan PH, COD dan BOD (3) Ketebalan komposisi yang menghasilkan penurunan terbesar terhadap nilai PH, COD dan BOD adalah ketebalan 80 cm (4) Urutan komposisi yang paling optimal menghasilkan penurunan PH dan COD adalah urutan nomor 4 (Kerikil-Pasir-Ijuk-Arang) dan untuk BOD adalah urutan nomor 2 (Pasir-Kerikil-Ijuk-Arang).

Kata Kunci: *Grey Water Filter*, PH, *Chemical Oxygen Demand*/COD, *Biochemical Oxygen Demand*/BOD

ABSTRACT

Wildan Akbar Fauzan. ***THE EFFECT OF COMPOSITION SEQUENCE AND MATERIAL THICKNESS ON A FILTER TOWARD ACIDITY LEVEL AND OXYGEN CONTENT IN GREYWATER.*** *Thesis, Surakarta: Faculty of Teacher Training and Education of Universitas Sebelas Maret, January 2019.*

The aims of the research were to (1) identify the thickness effect of Greywater Filter composition toward water's Acidity Level (PH), Chemical Oxygen Demand (COD) and Biochemical Oxygen Demand (BOD), (2) to explore the effect of Greywater Filter composition sequence toward water's PH, COD and BOD, (3) to find out the optimum thickness of Greywater Filter toward water's PH, COD and BOD, (4) to investigate which the optimum Greywater Filter composition sequence that produce maximum decrease toward water's PH, COD and BOD.

The research employed an experiment quantitative method and the data analysis technique used simple linear regression. The research was conducted in August until October 2018 covering Greywater Filter production and laboratory test. The filter was made at Campus V of Universitas Sebelas Maret and data collection was done at Sub Chemistry Lab of UPT Laboratorium Terpadu of Universitas Sebelas Maret in Surakarta. The variables influencing the research were (1) independent variables: composition thickness variations which are 20 cm, 40 cm, 60 cm, and 80 cm, and composition sequence variations consisting of sand, gravel, ijuk (palm fiber) and charcoal, (2) dependent variables: water PH, COD, and BOD.

The results indicate that: (1) There was an effect of the thickness of the composition toward the decrease of PH, COD, and BOD. (2) There was an effect of the composition thickness toward the decrease of PH, COD and BOD. (3) The material thickness which produce the highest decrease of water PH, COD and BOD was the 80 cm thickness. (4) The optimum composition sequence which produce the highest decrease of PH and COD was the sequence no. 4 (gravel, sand, palm fiber, charcoal), while the optimum composition sequence which produce the highest decrease of BOD was the sequence no. 2 (sand, gravel, palm fiber, charcoal).

Keywords: Greywater Filter, PH, Chemical Oxygen Demand/COD, Biochemical Oxygen Demand/BOD